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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,151	03/24/2004	Sergei F. Burlatsky	67,097-021, EH-11107	5265
26096	7590	06/16/2006	EXAMINER	
CARLSON, GASKEY & OLDS, P.C.			HOPKINS, ROBERT A	
400 WEST MAPLE ROAD			ART UNIT	
SUITE 350			PAPER NUMBER	
BIRMINGHAM, MI 48009			1724	

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/808,151

Applicant(s)

BURLATSKY ET AL.

Examiner

Robert A. Hopkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 17 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 14, 15 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 3-24-04, 7-25-05, 12.
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3,5,7,8, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Staroselsky et al(7041154)

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Staroselsky et al teaches a fuel system comprising a fuel channel(40) and an oxygen receiving channel(44), and an oxygen permeable porous membrane(42) in communication with the fuel channel and the oxygen receiving channel. Staroselsky et al further teaches wherein the oxygen permeable porous membrane is generally parallel to the fuel channel and the oxygen receiving channel(figure 2). Staroselsky et al further

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teaches wherein the oxygen permeable porous membrane is non-perpendicular to the fuel channel. Staroselsky et al teaches wherein the fuel channel communicates a liquid fuel containing a dissolved oxygen therethrough, the oxygen permeable porous membrane operable to separate the dissolved oxygen from the fuel. Staroselsky et al further teaches wherein the fuel channel communicates a liquid fuel in a first direction and the oxygen receiving channel communicates a gas in a direction opposite the first direction. Staroselsky et al further teaches a pressure differential across the oxygen permeable porous membrane, the pressure differential lower than a capillary force of the fuel within a pore of the oxygen permeable porous membrane. Staroselsky et al further teaches wherein the oxygen receiving channel comprises a vacuum.

Claims 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Staroselsky et al(7041154).

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Staroselsky et al teaches a fuel system comprising a fuel channel(40), an oxygen receiving channel(44), and a gas/fuel contactor(42) in communication with the fuel channel and the oxygen receiving channel. Staroselsky et al further teaches a fuel

condenser(heat exchanger in fig 1) in communication with the oxygen receiving channel.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4,6,9,13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staroselsky et al(7041154) taken together with Spadaccini et al(6709492).

Staroselsky et al teaches the limitations of claim 4 but is silent as to wherein the oxygen receiving channel communicates an inert gas therethrough. Spadaccini et al teaches a fuel system including a fuel channel, an oxygen receiving channel, and an oxygen permeable porous membrane in communication with the fuel channel and the oxygen receiving channel, and wherein the oxygen receiving channel communicates an inert gas therethrough. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide an oxygen receiving channel which communicates an inert gas therethrough in order to provide a method for removing oxygen from the membrane which does not require a mechanical structure such a vacuum source.

Staroselsky et al teaches all of the limitations of claim 6 but is silent as to wherein the oxygen permeable porous membrane is unsupported. Spadaccini et al teaches an oxygen permeable porous membrane which is unsupported. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide an unsupported membrane so that a porous substrate for supporting the membrane is not required.

Staroselsky et al teaches all of the limitations of claim 9 but is silent as to wherein the oxygen receiving channel comprises a sweep gas. Spadaccini et al teaches a fuel system including a fuel channel, an oxygen receiving channel, and an oxygen permeable porous membrane in communication with the fuel channel and the oxygen receiving channel, and wherein the oxygen receiving channel comprises a sweep gas. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide an oxygen receiving channel which comprises a sweep gas in order to provide a method for removing oxygen from the membrane which does not require a mechanical structure such a vacuum source.

Staroselsky et al teaches all of the limitations of claim 13 but is silent as to a sweep gas reservoir in communication with the oxygen receiving channel. Spadaccini et al teaches a fuel system including a fuel channel, an oxygen receiving channel, and an oxygen permeable porous membrane in communication with the fuel channel and the oxygen receiving channel, and a sweep gas reservoir in communication with the oxygen receiving channel. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a sweep gas reservoir in communication

with the oxygen receiving channel to provide a method for removing oxygen from the membrane which does not require a mechanical structure such a vacuum source.

Staroselsky et al teaches all of the limitations of claim 16 but is silent as to wherein the gas/fuel contactor comprises an unsupported oxygen permeable porous membrane in communication with the fuel channel and the oxygen receiving channel. Spadaccini et al teaches an oxygen permeable porous membrane which is unsupported. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide an unsupported membrane so that a porous substrate for supporting the membrane is not required.

Claims 17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staroselsky et al(7041154) taken together with Spadaccini et al(6709492).

Staroselsky et al teaches a method of minimizing dissolved oxygen from within a fuel system comprising the steps of locating an oxygen permeable porous membrane(42) adjacent a liquid fuel flow containing a dissolved oxygen. Staroselsky et al is silent as to flowing a sweep gas along the oxygen permeable porous membrane to draw the oxygen through the oxygen permeable porous membrane. Spadaccini et al teaches a method of minimizing dissolved oxygen from within a fuel system comprising the steps of locating an oxygen permeable porous membrane(42) adjacent a liquid fuel flow containing a dissolved oxygen and flowing a sweep gas along the oxygen permeable porous membrane to draw the oxygen through the oxygen permeable porous membrane(fig 3). It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a step of flowing a sweep gas along the

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oxygen permeable porous membrane to draw the oxygen through the oxygen permeable porous membrane of Staroselsky et al.

Staroselsky et al further teaches the step of locating the oxygen permeable porous membrane non-perpendicular to the fuel flow. Staroselsky et al further teaches maintaining a pressure differential across the oxygen permeable porous membrane, the pressure differential lower than a capillary force of the fuel within a pore of the oxygen permeable porous membrane. Staroselsky et al taken together with Spadaccini et al teaches maintaining a pressure differential across the oxygen permeable porous membrane, the pressure differential comprising a pressure on the sweep gas side lower than a pressure on the fuel side. Spadaccini et al further teaches communicating the sweep gas to a fuel condenser(16) downstream of the oxygen permeable porous membrane and condensing the fuel from within the sweep gas.

***Allowable Subject Matter***

Claims 14,15, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 recites "further comprising a second gas/fuel contactor in communication with said fuel channel and said oxygen receiving channel, said second gas/fuel contactor in series with said gas fuel contactor". Both Staroselsky et al and Spadaccini et al teach a single gas/fuel contactor in communication with a fuel channel and an oxygen receiving channel. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a second gas/fuel contactor



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in communication with said fuel channel and said oxygen receiving channel, said second gas/fuel contactor in series with said gas fuel contactor because Staroselsky et al and Spadaccini et al fail to suggest such a modification. Claim 15 depends on claim 14 and hence would also be allowable upon incorporation of claim 14 into claim 11.

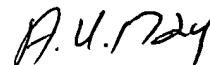
Claim 18 recites "wherein said step(2) further comprises the steps of : flowing the gas in a direction opposite a direction of the liquid fuel flow". Spadaccini et al teaches flowing a gas perpendicular, but not opposite, to a liquid fuel flow. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a step of flowing the gas in a direction opposite a direction of the liquid fuel flow because Spadaccini et al does not suggest such a modification. Staroselsky et al only teaches using a vacuum to provide a pressure drop across the membrane.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
ROBERT A. HOPKINS  
PRIMARY EXAMINER



Rah  
June 8, 2006